Composting Birds and Byproducts (Cont.)

Till litter

- ✓ If euthanized carcasses are confined to a portion of the house and caking is extensive, tilling the litter in the house prior to building windrows will enhance composting, which prevents leachate and improves oxygen entry into the pile

Build compost units (windrows)

- ✓ Mixing and piling method: method used if no additional carbon source is needed; involves mixing the carcasses with the existing litter base
- ✓ Layering method: leave no carcasses or bird parts exposed
- ✓ Shredding and piling method: not recommended for use with HPAI; may create increased risk of exposure to virus and cause increased utilization of equipment that then needs to be disinfected

Compost bags

- ✓ Must have equipment to mix carcasses and carbon to get proper blend and special equipment to load the bags must be set up
- ✓ Move carcasses and carbon source to location where bag is located
- ✓ Load carcasses and carbon source into equipment (such as the AgBag)
- ✓ Material must be 40-50% moisture; add water if needed
- ✓ Fill bags as needed according to manufacturer's directions
- ✓ Close ends of bag with seal strip provided with the bag
- ✓ Aerate in bags for 8-12 weeks; after this time the bag is opened and the material is piled and cured for an additional 30-60 days

Byproducts

- ✓ Contaminated litter: place excess contaminated litter in windrows to compost and deactivate pathogens
- ✓ Feed: place excess contaminated litter in windrows to compost and deactivate pathogens

Finishing the Site

- ✓ Cover windrow with compost fleece or another suitable porous fabric to protect from scavengers; do not use a cover that does not allow some air to circulate as this will cause condensation and may negatively affect the composting process
- ✓ Secure the material using dirt and soil on the edges or some other means to restrict scavengers from accessing the windrows

After Composting

Disinfection

- ✓ Disinfect all tools and equipment used after forming windrows
- ✓ Disinfect house

Maintenance

- ✓ Monitoring
  - ❑ Temperature
  - ❑ Viral
  - ❑ Vector
  - ❑ Moisture
- ✓ Turning
  - ❑ Can relocate the pile to another site or another bin or simply turn in place
  - ❑ Turn compost in place by shifting windrows towards the ends
  - ❑ Scrape along the edges of the turned windrow and deposit material on the pile
  - ❑ If the pile is moved, pick up the material and drop in a cascading manner—do not merely push the material from one place to another
  - ❑ Add water when needed
  - ❑ Cap the turned pile with a minimum of 4 inches of litter or sawdust to cover any exposed tissue on the surface
  - ❑ Re-cover with appropriate cover
  - ❑ Continue to monitor temperature

Disposal

- ✓ Land application
- ✓ Landfilled
- ✓ Stored and aged

USDA APHIS

Procedures for Outdoor Composting of AI-Infected Poultry Carcasses

Important Numbers

Determine Compost Site Availability

Space needed

- ✓ Windrow composting
  - ❑ Windrow width = 12 feet
  - ❑ Buffer width = 6 feet on each side (12 feet total)
  - ❑ Total width = 24 feet
  - ❑ Height = 6 feet
  - ❑ Length = 1 foot per 300 lbs
- ✓ Bin composting
  - ❑ Impractical for large numbers of animals
  - ❑ Usually 160 ft^3 needed for every 1000 lb of animals
- ✓ Compost bag (such as the Ag Bag)
  - ❑ Differently manufactured bags may have different dimensions.
  - ❑ Can be up to 200 feet long and 5, 10, or 12 feet in diameter
  - ❑ Can roughly hold 250-1000 yd^3, depending on the diameter

Area should be:

- ✓ Located away from neighbors and/or out of sight
- ✓ Located downwind from neighbors and/or house
- ✓ Close to barn or ability to transport
- ✓ Void of excess water
- ✓ Clear of underground and overhead utility lines
- ✓ Clear of surface water and environmentally sensitive areas
- ✓ Can be out of commission (for crops, pasture, etc.) for a given period of time

Logistics

Conduct farm evaluation

- ✓ Inventory available supplies, equipment, materials
- ✓ Collect site specific data
  - ❑ Bird species and age
  - ❑ Average bird weights
  - ❑ Production type
  - ❑ Litter depth in each part of the house
  - ❑ Location of carcasses
  - ❑ Litter moisture and condition
  - ❑ Ability to remove carcasses
  - ❑ Number of avian carcasses
  - ❑ Least material/handling needs

Logistics (Cont.)

Conduct farm evaluation (Cont.)

- ✓ Determine carbon source needs
  - ❑ Pounds of broiler meat = number of birds in house x average weight of bird
  - ❑ Total litter required = pounds broiler meat/ area of windrow or bin planned x 2.5 – 3 lbs. of carbon
  - ❑ Average litter depth = sum of litter depths in each part of house/number of parts of house
  - ❑ Litter available = average litter depth x area of house
  - ❑ Amount of carbon material to obtain = total litter required – litter available
  - ❑ Amount of carbon material to obtain (in cubic yards) = lbs needed x (1/bulk density)
- ✓ Determine location of windrow or bin
  - ❑ Identify an area that is sensitive to the surroundings
  - ❑ Consider location of drinking water supplies
  - ❑ Close to material that will be composted and/or ability to transport compost without causing contamination in all weather conditions with minimal interference with other operations and traffic
  - ❑ Avoid sites where excess water will enter
  - ❑ Does not interfere with underground or overhead utilities
  - ❑ Make sure the land is able to be out of commission for the entire compost period
  - ❑ Seldom is it possible to find a site that is ideal in all of the factors—select the location that will have the least impact
- ✓ Choose composting method
  - ❑ Layering: if depopulation concentrates carcasses in a small section of the house
  - ❑ Mixing and piling: Where carcasses are distributed more evenly over the litter service; least labor and cost
  - ❑ Shredding and piling: This method is not recommended for highly pathogenic organisms, and should be avoided when composting birds infected with HPAI
  - ❑ Compost bag: requires specialized equipment as well as people who know how to operate the equipment; allows for containment of material within the bag

Logistics (Cont.)

Conduct farm evaluation (Cont.)

- ✓ Determine security needs
  - ❑ Can compost pile be protected from vandals, scavengers, and disease vectors?
  - ❑ Dust and wind must be taken into account
- ✓ Obtain resources
  - ❑ Personnel
  - ❑ Supplies: carbon source, PPE, hand tools, personal needs
  - ❑ Equipment: loader, truck, pressure washer, dumpster, compost bag equipment
- ✓ Prepare for composting
  - ❑ Let birds consume all feed
  - ❑ Raise the feeders and drinking lines
  - ❑ Depopulate
  - ❑ Remove poly used for euthanasia
- ✓ Transport
  - ❑ Lay polyethylene liner onto the ground outside house where truck will be loaded
  - ❑ Load mortalities onto truck with a front loader if possible, or else load manually
  - ❑ Minimize dust generation during loading
  - ❑ Cover truck to seal carcasses and material in and prevent any material from escaping
  - ❑ Transport to windrow site and unload onto site of compost pile
  - ❑ After transporting, dispose of plastic
  - ❑ After last load, thoroughly disinfect the truck

Composting Birds and Byproducts

Prepare the site

- ✓ For bin composting, the bin should be constructed from any material that will confine the compost pile material and resist lateral loads
- ✓ Lay down a layer of plastic the width and length of your anticipated windrow or on the bottom of your constructed bin
- ✓ Lay down 12-24 inches of carbon source as a base (use thicker end of range if low evaporation and high precipitation)